2012 Sanitary Bypass Pump & Sanitary Lift Station Inspections and Bypass Pump Wet Testing

Plan File 198-5-60

Project No. SM497120101

1. Standard Special Provisions, Plan File Number 52-4-51, dated August 22, 2011 or latest revision thereof, is part of this contract.

2. The purpose of this contract is to perform monthly inspections on 84 sanitary bypass manhole pump sites and 7 sanitary lift stations, and to generate monthly condition reports for the sites. The condition reports will give an assessment of the readiness of the respective site to operate effectively when called to do so.

3. Time of completion: All work on this project shall end by February 10, 2013. The Contractor shall submit monthly condition reports for all 84 bypass sites and 7 lift stations, for a total of 91 inspection locations, by the 10th of the following month. Data shall be submitted electronically to Mr. Kurt Sprangers of the EES at the e-mail address of: kurt.sprangers@milwaukee.gov. All inspection data shall be submitted in the supplied spreadsheet format. It is anticipated that the Contractor will begin the inspections portion of this contract in February 2012, and complete 12 monthly inspections.

4. The Contractor shall invoice the City for the work executed as part of this contract. The Contractor may invoice up to four times during the term of the contract at regular intervals. Invoices shall be sent to the attention of: Mr. Timothy Thur, City of Milwaukee Environmental Section, 841 North Broadway – Room 820, Milwaukee, Wisconsin 53202. It shall also include the project name and contract number.

5. Due to the nature of this contract, the listed quantities in the bid package are estimates. Payment will be made based on actual work performed under the terms of these special provisions. This contract may be terminated prior to the completion date of at the sole discretion of the City.

6. The Contractor shall submit with their bid package a statement of experience that will demonstrate a minimum of 5 years experience with inspecting and servicing submersible pumps as part of a municipal sewer system. The Contractor shall also submit 3 verifiable job references of successfully completed projects equal to this work in the past 5 years. Failure to provide documentation of qualifications, or if the qualifications are deemed unsuitable, shall be cause for the rejection of the bidder's corresponding bid.

7. This contract shall conform to the requirements for Service Contract Wage Requirements as provided in the bid package.

8. Inspections and wet tests shall be performed by at least 1 technician with a minimum of 5 years of experience inspecting, trouble shooting, and repairing submersible pumps. The technician shall be certified by a major submersible pump manufacturer for the type of work being performed.

9. Prior to initiating the sanitary bypass pump inspection, the Contractor shall arrange a meeting with the Environmental Engineering Section (EES) to discuss the proposed work and work schedule. At this

meeting the Contractor shall provide an initial work schedule for the field work on this contract. Contact Mr. Timothy Thur at 414-286-2463 to arrange the meeting.

10. If any condition exists at a pump manhole or discharge manhole locations that requires immediate attention or could be considered dangerous to the public including, but not limited to, a broken or missing manhole cover, the Contractor shall immediately notify Sewer Maintenance at (414) 286-2013. The Contractor shall not leave the site until a City representative is present and has taken control of the site.

11. The Contractor shall keep debris from entering the sanitary sewer system as a direct result of the work and work practices under this contract. The Contractor shall remove any material and equipment that enters the manhole or sewer as a result of this work. If the Contractor's equipment becomes lodged in the sewer or manholes, it shall be removed by the Contractor at the Contractor's expense. Moreover, this shall include, but not be limited to, any excavations and/or repairs of the sewer, manholes and/or appurtenances, backfilling, or site restoration caused by the Contractor's equipment becoming lodged in the sewer or appurtenant manholes and shall be performed at the Contractor's expense.

12. In general, the Contractor shall minimize the traffic impact that will be caused in the execution of the required duties of this contract. All traffic control materials and equipment shall comply with the "U.S. Department of Transportation, Federal Highway Administration, Manual on Uniform Traffic Control Devices, for Streets and Highways, Part VI - Traffic Control for Street and Highway Construction, Maintenance, Utility, and Emergency Operations", the "State of Wisconsin Supplement to the Manual on Uniform Traffic Control Devices", and the "Work Zone Safety, Guidelines for Construction, Maintenance and Utility Operations, January 2006 published by Transportation Information Center, University of Wisconsin-Madison".

13. No equipment or materials shall be stored in the public right-of-way during non-working periods.

14. During all working periods, the Contractor shall maintain local traffic access. All requests for the installation of "Temporary No Parking" signs shall be made three (3) working days prior to the start of work actives. Please contact Mr. James Brown at (414) 286-3276 if there are any questions related to traffic control needs.

15. The Contractor shall contact owners/residents and businesses within the project limits, as needed, to inform them of the project and provide them with any information deemed necessary to gain access and/or permission for the successful performance and completion of the contract.

16. Work on this contract may not be subcontracted without prior approval by the City.

Part I – Monthly Inspections

17. The Contractor shall open every bypass pump manhole and discharge manhole specifically looking for defects and signs of distress that would impact the effectiveness of the pump system and its appurtenances.

18. The information presented on the enclosed maps is based on the best available information from the City. No field survey work was performed by the City in preparation for this contract prior to bidding.

The Contractor is responsible for becoming familiar with the proposed site conditions for accessibility, traffic conditions, bypass pump and lift station locations, etc.

19. The City reserves the right, at the discretion of the Commissioner of Public Works, to increase or decrease the number of bypass pump and lift station sites to be part of this contract. The amount of work may be increased or decreased contingent upon the available funds or changing field conditions. Any change in work shall not raise a claim for extra work and shall be paid at the unit price bid for this contract by the awarded Contractor.

20. All work, including but not limited to travel, materials, labor, and time necessary to perform the respective pump inspections and to complete the Sanitary Bypass Pump and Lift Station Check List ("check list") shall be included in the unit price bid for the Sanitary Bypass Pump or Lift Station Inspection. The Contractor shall be paid for each pump inspection location or lift station location completed based on the unit price bid.

21. For the purposes of payment, lift stations shall be treated as a single location. Separate inspection information is required for both pump systems at each lift station.

22. The Contractor shall make a good faith effort to inspect every site. If the Contractor arrives at a site and cannot access the site (i.e. due to snow, construction, etc.), the Contractor shall contact the EES for further instruction. If the EES directs the Contractor to NOT inspect the site and remove it from the work, the Contractor shall be paid for attempting to inspect the site at a rate of 20% of the cost of the unit price bid for inspection.

23. The list of bypass locations to be inspected and inspection criteria are included on the enclosed document titled Sanitary Bypass Pump and Lift Station Check List. The check list shall also be provided to the Contractor electronically prior to the start of work.

24. The Contractor shall at a minimum complete the following as part of the inspection process of the pump sites:

- Visually inspect and note the condition of the sanitary pump manhole.
- Visually inspect and note the condition of the pump system, including but not limited to, the pump, valves, discharge pipe, power cables, wiring, float and\or transmitter, and gates.
- Visually inspect and note the condition of the discharge storm manhole and connection of discharge piping and backflow devices (if applicable) from the sanitary pump manhole.
- Check and note WE Energies electric meter reading after inspection.
- Visually inspect and note the internal and external condition of the control cabinet. Note tripped breakers, burnt electrical odors, etc.
- Check and note voltage supply to the cabinet.
- Check and note voltage supply between all phases of the electrical supply to the control cabinet.
- Check and note amperage draw on all phases of the pump motor.
- Check and note condition of thermal overload protections.
- Check and note pump motor Meg readings in all phases.
- Check and note any unusual noise or vibrations while the pump is operating.
- Check and note condition of level sensing equipment (float or ultrasonic).
- Check and note functionally of Multiranger. Note that the reading is at or near 0.0.

- Check all wire connections at the pump and in the control panel/junction box.
- For units with Variable Frequency Drives (VFD), check that VFD control display reads "Remote".
- Check and note indicator lights on the PLC. Note that the 'Power' light and 'Run' lights are lit, or if 'Fault' light is lit.
- Check and note that indicator lights on the UPS unit show proper condition.
- Check and note that the modem lights are indicating proper communications. Multiple modem lights (RxD, TxD) should be visibly blinking.
- Provide comments and recommended repairs.

25. The City reserves the right to adjust, within reason, the check list to match field conditions. Reasonable changes to the check list work shall not raise a claim for extra work.

26. The Contractor shall note additional conditions not listed above that may indicate that a pump system may not operate correctly. Reasonable efforts above the minimum, in connection with completing the schedule inspections shall not raise a claim for an extra work.

Part II – Wet Testing of Sanitary Bypass Pump Sites

27. The purpose of this work is to test the readiness of the bypass pump site, and to make minor corrections to the bypass pump site, so that the site will perform during a high water event. The test shall verify that the existing equipment properly measures water levels, that the pumps turn on and off at the programmed elevations, that the pump effectively draws the water level down, and that the discharge pipe is in good condition. The Contractor shall test the bypass pump site by isolating the pump manhole and filling it with water and record how the pump performs under the load conditions. All sites shall be filled a minimum of two times. The bid item for this work shall include, but not be limited to, the necessary preparation, equipment, traffic control, permits, documentation, securing a water source, and all other resources needed to successfully perform the test. All costs associated with this work shall be included in the unit prices bid for the respective items for Bypass Pumps Wet Test.

28. If a pump does not turn on at its approximate listed on elevation or off at its approximate listed off elevation, the contractor shall troubleshoot to eliminate potential causes of the malfunction, and make minor corrections to the pump system. This work shall include, but not be limited to, examining the condition of the floats, running the pump in manual, drilling a hole in the discharge elbow to remove air-lock, assisting City sub-contractors with adjustments to pump system, and additional filling of manhole as needed. There shall be no additional compensation for this work.

    If any aspect of the operation of the pump is out of the ordinary, the contractor shall note this on the Wet Testing Sanitary Bypass Form. The Contractor shall also note on this form any trouble shooting the Contractor has performed, recommendations the contractor may have and any repairs the Contractor may have performed. This work shall be included in the unit price bid for respective items for Bypass Pumps Wet Test.

29. Wet tests that cannot be completed to due to the Contractor's failure to plan shall be considered incomplete and not subject to compensations. No extras will be paid for items or situations that should have been resolved by the Contractor performing adequate inspections of the site.

30. The Contractor shall perform the wet testing on the sites listed on the enclosed Wet Test Location Information spreadsheet. The City reserves the right, at the discretion of the Commissioner of Public Works, to increase or decrease the number of bypass pump sites to be tested. The amount of work may be increased or decreased contingent upon the available funds or changing field conditions. Any change in work shall not raise a claim for extra work and shall be paid at the unit price bid for this contract by the awarded Contractor.

31. Wet testing may only be performed between March 15 and November 30.

32. The Contractor is responsible for the risk of basement backups in the performance of this contract, and for carrying the insurance to cover liabilities. Additional risk and insurance requirements are located in the bid package and Department of Public Works General Provisions.

33. If existing sewer flows are great enough to prevent plugging the sewer main for the duration of the test, the Contractor shall notify the EES. The City and Contractor shall discuss in good faith and come to a mutually agreeable resolution for completing the test.

34. The Contractor shall be responsible for securing the necessary water hydrant permits. The contractor shall contact the City of Milwaukee permit center at (414) 286-8208, for permits, rules, valve requirements, and usage information. The Contractor is responsible for supplying an RPZ valve and hose ramps and shall be responsible for safely directing traffic. Approximate permit fees are $650 for water meter deposit, $65 per hydrant permit fee, $250 for set-up by Milwaukee Water Works (MWW) at the first hydrant used, and $1.50 per ccf of water used. Permit fees and rates are subject to change at any time. All permit fees and related deposits shall be included in the unit price bid for respective items for Bypass Pumps Wet Test.

35. The contractor shall identify preferred hydrants for wet testing prior to testing. Hydrant permits will require the specific hydrant number. **Additionally, some hydrants in the City of Milwaukee have a modified operating mechanism (McGard locks). These hydrants cannot be operated with a standard hydrant wrench. EES does <u>not</u> have access to a tool which can operate these hydrants.** The contractor shall provide a list to the EES of hydrants to be used during testing that have a non-standard operating mechanism, no later than 1 month prior to the scheduled test of the site.

36. The quantity of water required to perform a wet test will vary based on manhole depth, size, and whether water can be recycled during the test. No extra payment shall be made based on the quantity of water used to perform the test.

37. All work and materials necessary to perform a wet test of a bypass pump site that is equipped with manually operated shear gates shall be included in the unit price bid for Bypass Pumps Wet Test. This work shall include, but not be limited to, lubricating and freeing stuck shear gates. The City makes no assurances that all existing shear gates are operating properly. Sewer main plugs may need to be used in sewer lines where shear gates do not exist. Pump manholes where greater than 50% of the sewer main connections have shear gates shall be paid under Bypass Pumps Wet Test.

38. All work and materials necessary to perform a wet test of a bypass pump site not equipped with shear gates shall be included in the unit price bid for Bypass Pumps Wet Test w/ Plugs. This work shall include, but not be limited to, providing the necessary plugs and support equipment to isolate the pump

manhole. The Contractor shall take extra care when using sewer plugs to insure they do not become lodged in the sewer. The Contractor is solely responsible for the use of the sewer plugs and in the event a plug or any equipment becomes lodged in the sewer the Contractor shall take whatever corrective action necessary to correct the matter including, but not be limited to, excavating and replacing the sewer segment, at their own expense. A pump manhole where 50% or more of sewer pipe connections require sewer plugs shall be paid under Bypass Pumps Wet Test w/ plugs.

39. The Contractor shall only perform wet testing work during periods of dry weather. If a rain event occurs with more than 0.25 inches of accumulation in twenty-four hours, the Contractor shall call the EES before starting work. Delays due to rain events will not be considered acceptable grounds for extra workdays.

40. The Contractor shall perform the following as part of the wet testing process. Additional precautions shall be taken as needed to prevent basement backups and/or sewer overflows.

- Contact Mr. Kurt Sprangers of EES at (414) 286-0515, 3 working days prior to scheduling any wet test of a bypass site. No wet test shall take place without a representative of the EES on site at the time of the testing or as agreed upon by EES.
- Complete a reconnaissance of the bypass site by identifying the pump manhole, discharge manhole, control cabinet, water source, traffic conditions, and upstream sanitary manhole(s).
- Review contents of Wet Testing Bypass Pumps Form.
- Verify that pump controls are ready for testing. Hand/off/auto switch must be in "auto" position. Multiranger should read close to zero (if applicable). PLC indicator lights should show "run" and power" lights.
- Identify potential sewer backup locations by visual inspection. The City can provide maps showing building laterals of record. However, the City does not guarantee the accuracy of these maps. Extra attention is required to monitor all incoming sewers and prevent basement backups.
- Properly plan and prepare equipment for use prior to beginning wet testing to ensure minimizing the time that the pump manhole will be filled and the sewers will be plugged.
- Mark "pump on" and "pump off" elevation inside the test manhole.
- Remove the blind flange on the discharge pipe (if applicable).
- Place plug(s) and/or close gate(s) to incoming sanitary sewer main(s).
- Using clean water, rinse the inside of the pump manhole thoroughly to remove sanitary debris. Run hydrant water in manhole until hydrant water runs clear.
- Once the pump manhole has been rinsed, place plug and/or close gate to outgoing sewer main.
- Fill the pump manhole, using a clean water source, until the water height causes the pump to engage.
- Run pump for 5 minutes. If pumped water is not being recycled, continue adding water to manhole.
- As the pump is being run, complete the "Wet Testing Bypass Pumps Form". If the pump does not engage from the water level within a one foot of the on elevation, the test shall be stopped. At no time shall the water level in the manhole be allowed to overflow to the surface.
- Verify that the flow to the discharge manhole is flowing properly. Note any unusual conditions.
- Discontinue water source and allow pump to draw down water. Note whether the pump disengages automatically and the water level in the manhole that this occurs.

- Once water level in the manhole has returned to normal flow conditions, repeat the wet test by filling the manhole until the pump engages. Allow the pump to run again for 5 minutes. The contractor shall not allow the pump manhole to overflow.
- Remove downstream plug or gate.
- Carefully remove upstream plug(s) and/or gate(s).
- Reinstall blind flange (if applicable).
- Complete Wet Testing Bypass Pumps Form and submit to EES.

Wet Testing Sanitary Bypass Pumps Form

Date: _____ Time: _____ Crew: _____

Weather Conditions: _____

Pump Location: _____ Permit Number: _____

Water Source Location: _____

General Pump Condition: Good Fair Poor Pump Model: _____ (if available)

Discharge Pipe Condition: Good Fair Poor Modem: CD RxD TxD

Level Sensing Equipment: Floats Ultrasonic Pressure Good Fair Poor

PLC: Power Run Fault VFD (if applicable): Power Local Remote Fault

Other site condition comments: _____

Pump off elevation: _____ Feet above flowline: _____

Pump on elevation: _____ Feet above flowline: _____

Pump power supply: _____/_____/_____ volts, _____ phase(s)

Meg readings: _____

Pump amps when running dry: ___/___/___ Pump amps when running wet: ___/___/___

Pump engaged at display reading: _____ and _____ inches above / below mark.

Pump stopped at display reading: _____ and _____ inches above / below mark.

Manhole Size: _____ Time to draw down 1 foot: _____ Corresponding rate: _____

Repairs performed: _____

Repairs recommended: _____